Referring to the Literal Translation of International Application PCT/JP2004/008108

In the Claims:

1. (currently amended) A method of manufacturing single-crystal semiconductor wafers, wherein a plurality of single-crystal semiconductor small-scale wafers of a relatively small diameter [[~~(2a-d)~~]] desired by users are cut out from a single-crystal semiconductor large-scale wafer of a relatively large ~~diameter (1a-1d).~~ diameter.

2. (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein said semiconductor is a compound semiconductor.

3. (original) The method of manufacturing single-crystal semiconductor wafers according to claim 2, wherein said compound semiconductor is selected from the group consisting of GaAs, InP, and GaN.

4. (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein said large-scale wafer has a thickness in a range of 0.15 mm to 1.5 mm.

5. (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein said small-scale wafers are cut out by a method selected from the group consisting of a laser method, an electric discharge

machining method, a wire saw method, an ultrasonic method, and a grinding method by means of a cylindrical core on which diamond is electrically deposited.

**6.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein at least three said small-scale wafers having a diameter of 2 inches or more are cut out from said large-scale wafer having a diameter of 4 inches or more.

**7.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 6, wherein at least four said small-scale wafers having a diameter of 2 inches or more are cut out from said large-scale wafer having a diameter of 5 inches or more.

**8.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 7, wherein at least seven said small-scale wafers having a diameter of 2 inches or more are cut out from said large-scale wafer having a diameter of 6 inches or more.

**9.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein a total main surface area of said small-scale wafers cut out from said large-scale wafer corresponds to at least 50% of a main surface area of said large-scale wafer.

**10.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein defective parts included in said large-scale wafer correspond to at most 65% of a main surface area of said large-scale wafer.

**11.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein said small-scale wafers are cut out from a plurality of said large-scale wafers in a stacked state.

**12.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein each of said small-scale wafers has a mark for indicating a part of said large-scale wafer from which each of said small-scale wafers is cut out.

**13.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein each of said small-scale wafers has an orientation flat and an index flat.

**14.** (currently amended) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein each of said small-scale ~~single crystal semiconductor~~ wafers is cut out to have a protruding margin to be gripped when cleavage is carried out so as to form an orientation flat.

**15.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 14, wherein each of said

small-scale wafers has, in said protruding margin, a mark for indicating a part of said large-scale wafer from which each of said small-scale wafers is cut out.

**16.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein each of said small-scale wafers has a notch for easy determination of its crystal orientation and alignment.

**17.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 1, wherein said small-scale wafers are cut out by using a YAG laser beam.

**18.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 17, wherein said YAG laser is a pulse laser.

**19.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 18, wherein said small-scale wafers are cut out such that a plurality of holes in said large-scale wafer each made by a single shot of said pulse laser are aligned successively with the neighboring holes overlapping each other in a range of 30% to 87% of their diameters.

**20.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 17, wherein said large-scale wafer has a main surface as sliced from an ingot, a

main surface subsequently washed, or a main surface after a surface layer is etched away by a thickness of at most 10 mm, and said main surface is irradiated with said laser beam.

**21.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 17, wherein said large-scale wafer before cutting is supported by a plurality of supporting means for supporting the plurality of said small-scale wafers to be obtained after cutting.

**22.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 21, wherein each of said supporting means has a supporting area smaller than each of said small-scale wafers.

**23.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 22, wherein each of said supporting means is a vacuum chuck.

**24.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 22, wherein each of said supporting means is a pinholder, and a weight is placed on the wafer and arranged above said pinholder or a magnet is placed on the wafer and arranged above said pinholder having a magnetic property, so as to support said wafer more stably.

**25.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 17, wherein a gas jet is

given to blow off residues caused during cutting with said laser beam.

**26.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 25, wherein said gas and said residues are sucked and introduced into a dust collector.

**27.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 25, wherein said laser beam is adjusted such that an opening made by cutting with said laser beam has a width larger on a main surface side of said wafer to which the laser beam is incident than on the other main surface side, and a side surface of the opening is made at an angle ranging from 65 to 85 degrees with respect to the main surface of said wafer.

**28.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 17, wherein each of said small-scale wafers has a mark for indicating that each of them is cut out from what part of each of plurality of said large-scale wafers sliced from the same ingot, and said small-scale wafers cut out from the corresponding parts of said large-scale wafers are grouped into the same lot.

**29.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 17, wherein residues

caused during cutting and adhered to a periphery of each of said small-scale wafers are removed by rubbing.

**30.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 29, wherein a peripheral side layer of each of said small-scale wafers is removed by a grinding allowance of at most 0.3 mm with a grinder of rubber.

**31.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 30, wherein said peripheral side layer is removed by a grinding allowance of at most 0.1 mm, and either edge or both edges of the peripheral side are beveled by a grinder of rubber.

**32.** (original) The method of manufacturing single-crystal semiconductor wafers according to claim 30, wherein the entire surface of each of said small-scale wafers is etched to remove contaminations after the wafer's periphery is processed by the grinder of rubber.

**33.** (currently amended) A laser machining apparatus for cutting out a plurality of single-crystal semiconductor wafers of a relatively small diameter from a single-crystal semiconductor wafer of a relatively large diameter by a laser beam, comprising:

a plurality of supporting means **[[~~(12)~~]]** for supporting from underneath a plurality of regions to be cut out from said large-scale wafer to provide the plurality of said small-scale wafers;

a laser device including a laser beam window [[~~(13)~~]] supported by an XY stage above the wafer; and

a gas ejector [[~~(16)~~]] for giving a gas jet to blow off residues caused during cutting with the laser beam.

**34.** (original) The laser machining apparatus according to claim 33, wherein each of said supporting means includes a vacuum chuck or a pinholder, and has a supporting area smaller than a main surface of each of said small-scale wafers.

**35.** (original) The laser machining apparatus according to claim 34, wherein each of said supporting means includes a pinholder having a magnetic property, and further includes a magnet to be placed on said wafer and arranged above the pinholder.

**36.** (original) The laser machining apparatus according to claim 33, wherein said gas ejector as well as said laser device is supported by said XY stage.

**37.** (original) The laser machining apparatus according to claim 33, further comprising a dust collector for sucking the gas and the residues below said wafer to remove the residues.

**38.** (original) The laser machining apparatus according to claim 33, wherein said laser device is a YAG laser device.

**39.** (original) The laser machining apparatus according to claim 38, wherein said YAG laser device is a pulse laser device.

**40.** (currently amended) The laser machining apparatus according to claim 33, wherein said laser beam window **[[~~(13)~~]]** is connected to a laser generating source **[[~~(15)~~]]** via an optical ~~fiber (14).~~ fiber.